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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,081	07/30/2003	Isaac Farr	10019128-1	2201
22879	7590	12/09/2005	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			LIANG, LEONARD S	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 12/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/632,081	<b>Applicant(s)</b> FARR, ISAAC	
	<b>Examiner</b> Leonard S. Liang	<b>Art Unit</b> 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-16, 18-22, 24 and 29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-16, 18-22, 24 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

Claim 20 is objected to because of the following informalities: Claim 20 discloses "A printing device...permeable to printing fluid the electrically conductive coating..." This is not grammatically correct. It will be construed that the claim should state "A printing device...permeable to printing fluid **with** the electrically conductive coating..." Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

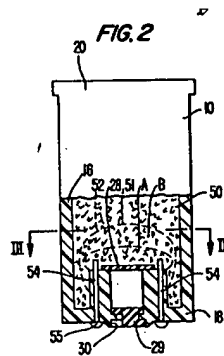
Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morandotti et al (US Pat 5289211) in view of Kumada et al (U Pat 5097248) and Maley et al (US Pat 5494562).

Morandotti et al discloses:

- {claim 2} A printing device configured to print a printing fluid onto a printing medium (column 2, lines 28-43); a printing fluid reservoir configured to hold a volume of the printing fluid (figure 2, reference 10); a print head assembly configured to transfer the printing fluid to the printing medium, wherein the print head assembly is fluidically connected to the printing fluid reservoir (column 2,

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lines 25-43); a printing fluid detector configured to detect a characteristic of the printing fluid, wherein the printing fluid detector includes a first electrode and a second electrode configured to be in contact with the printing fluid (figure 2, reference 54; column 2, lines 28-43)



Morandotti et al differs from the claimed invention in that it does not disclose:

- {claim 2} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating disposed over an electrically conductive substrate made of at least partially of a material selected from the group consisting of stainless steel, gold, palladium activated carbon, carbon black, carbon fiber cloth, graphite, glassy carbon, carbon aerogel, and cellulose-derived foamed carbon
- {claim 3} wherein the graphite is a graphite powder or a graphite cloth
- {claim 4} the substrate is made at least partially of a carbon material modified by a technique selected from the group consisting of a liquid-phase oxidations, gas-phase oxidations, plasma treatments, and heat treatments in inert environments

Kumada et al discloses:

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- {claim 2} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating disposed over an electrically conductive substrate (column 2, line 31-column 3, line 22)

Maley et al discloses:

- {claim 2} substrate made of at least partially of a material selected from the group consisting of stainless steel, gold, palladium activated carbon, carbon black, carbon fiber cloth, graphite, glassy carbon, carbon aerogel, and cellulose-derived foamed carbon (column 4, lines 41-50)
- {claim 3} wherein the graphite is a graphite powder or a graphite cloth (column 14, lines 41-50)
- {claim 4} the substrate is made at least partially of a carbon material modified by a technique selected from the group consisting of a liquid-phase oxidations, gas-phase oxidations, plasma treatments, and heat treatments in inert environments (column 4, lines 41-50; graphite naturally modified by these techniques)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Kumada et al into the invention of Morandotti et al. The motivation for the skilled artisan in doing so is to gain the benefit of protecting the electrodes.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Maley et al into the invention of Morandotti et al. The motivation for the skilled artisan in doing so is to gain the benefit of acquiring a sturdy electrically conductive electrode substrate.

Claims 5-6, 9-16, 18-20, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morandotti et al (US Pat 5289211) in view of Kumada et al (U Pat 5097248).

Morandotti et al discloses:

- {claims 5-6, 9, 18, 20, 24} A printing device configured to print a printing fluid onto a printing medium (column 2, lines 28-43); a printing fluid reservoir configured to hold a volume of the printing fluid (figure 2, reference 10); a print head assembly configured to transfer the printing fluid to the printing medium, wherein the print head assembly is fluidically connected to the printing fluid reservoir (column 2, lines 25-43); a printing fluid detector configured to detect a characteristic of the printing fluid, wherein the printing fluid detector includes a first electrode and a second electrode configured to be in contact with the printing fluid (figure 2, reference 54; column 2, lines 28-43)
- {claim 12} wherein the first electrode and second electrode are disposed at least partially within the printing fluid reservoir (figure 2)
- {claim 13} a conduit fluidically connecting the printing fluid reservoir to the print head assembly, wherein the first electrode and the second electrode are disposed at least partially within the conduit (figure 2)
- {claim 14} wherein the print head assembly includes a print head assembly reservoir configured to be periodically refilled with printing fluid from the printing fluid reservoir, and wherein the first electrode and the second electrode

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are disposed at least partially within the print head assembly reservoir (figure 2; column 3, lines 6-42)

Morandotti et al differs from the claimed invention in that it does not disclose:

- {claim 5} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating disposed over an electrically conductive substrate, and wherein the electrically conductive coating is permeable to printing fluid and is configured to increase the effective surface area of the electrode accessible to the printing fluid
- {claim 6} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating made at least partially from an electrically conductive polymer, and disposed over an electrically conductive substrate
- {claim 9} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating resistant to corrosion by printing fluid disposed over an electrically conductive substrate
- {claim 10} wherein the electrically conductive coating is made at least partially of a fluorine-containing polymer
- {claim 11} wherein the fluorine-containing polymer is a TEFLON material
- {claim 15} wherein both the first electrode and the second electrode are coated with the electrically conductive coating

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- {claim 16} wherein the electrically conductive coating is a protective polymer coating, further comprising a printing fluid-permeable electrically conductive polymer coating disposed over the protective polymer coating
- {claim 18} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating permeable to printing fluid disposed over an electrically conductive substrate, and wherein the electrically conductive coating includes a plurality of interior surfaces contactable by the printing fluid
- {claim 19} wherein the electrically conductive coating is porous
- {claim 20} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating at least partially made of a polymer, permeable to printing fluid with the electrically conductive coating being disposed over an electrically conductive substrate
- {claim 24} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating disposed over an electrically conductive substrate; and an electrically conductive protective coating disposed between the electrically conductive substrate and the electrically conductive coating permeable to printing fluid, wherein the coating is at least partially made of a TEFLON material

Kumada et al discloses:

- {claim 5} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating disposed over an electrically conductive substrate, and wherein the electrically conductive coating is



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permeable to printing fluid and is configured to increase the effective surface area of the electrode accessible to the printing fluid (column 2, line 31 – column 3, line 22)

- {claim 6} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating made at least partially from an electrically conductive polymer, and disposed over an electrically conductive substrate (column 2, line 31 – column 3, line 22)
- {claim 9} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating resistant to corrosion by printing fluid disposed over an electrically conductive substrate (column 2, line 31 – column 3, line 22)
- {claim 10} wherein the electrically conductive coating is made at least partially of a fluorine-containing polymer
- {claim 11} wherein the fluorine-containing polymer is a TEFLON material (column 3, line 1; tetrafluoroethylene is TEFLON)
- {claim 15} wherein both the first electrode and the second electrode are coated with the electrically conductive coating (column 2, line 31 – column 3, line 22)
- {claim 16} wherein the electrically conductive coating is a protective polymer coating, further comprising a printing fluid-permeable electrically conductive polymer coating disposed over the protective polymer coating (column 2, line 31 – column 3, line 22)

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- {claim 18} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating permeable to printing fluid disposed over an electrically conductive substrate, and wherein the electrically conductive coating includes a plurality of interior surfaces contactable by the printing fluid
- {claim 19} wherein the electrically conductive coating is porous (column 2, line 31 – column 3, line 22)
- {claim 20} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating at least partially made of a polymer, permeable to printing fluid with the electrically conductive coating being disposed over an electrically conductive substrate (column 2, line 31 – column 3, line 22)
- {claim 24} wherein at least one of the first electrode and the second electrode includes an electrically conductive coating disposed over an electrically conductive substrate; and an electrically conductive protective coating disposed between the electrically conductive substrate and the electrically conductive coating permeable to printing fluid, wherein the coating is at least partially made of a TEFLON material (column 2, line 31 – column 3, line 22)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Kumada et al into the invention of Morandotti et al. The motivation for the skilled artisan in doing so is to gain the benefit of protecting the electrodes.

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Claims 7-8, 21-22, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morandotti et al (US Pat 5289211) in view of Kumada et al (US Pat 5097248), as applied to claims 5-6, 9-16, 18-20, and 24 above, and further in view of Oka (US Pat 5821309).

Morandotti et al, as modified, teaches all limitations of the claimed invention except for the following:

- {claims 7, 21, and 29} wherein the electrically conductive polymer is selected from the group of electrically conductive polymers consisting of polypyrroles, polyanilines, polythiophenes, conjugated bithiazoles and bis-(thienyl bithiazoles)
- {claims 8 and 22} wherein the electrically conductive polymer is cross-linked

Oka discloses:

- {claims 7, 21, and 29} wherein the electrically conductive polymer is selected from the group of electrically conductive polymers consisting of polypyrroles, polyanilines, polythiophenes, conjugated bithiazoles and bis-(thienyl bithiazoles) (column 1, lines 17-25)
- {claims 8 and 22} wherein the electrically conductive polymer is cross-linked (abstract)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Oka into the invention of modified Morandotti et al. The motivation for the skilled artisan in doing so is to gain the benefit of forming a strong conductive polymeric coating.

***Response to Arguments***

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With respect to the issue of the previous action being improperly made final, the examiner agrees. Finality is withdrawn and this action is non-final.

With regards to the applicant's arguments over the art, the arguments filed 11/21/05 have been fully considered but they are not persuasive. The applicant claims that Kumada et al does not disclose an electrically conductive layer, but rather, only discloses an insulating coating layer. This is not true. The examiner refers the applicant to column 3, lines 18-21, which state "In addition, it is preferable to form a protective film of an anisotropic **conductor** on the surface of the exposed portion of the detection electrode in order to prevent corrosion..." (emphasis mine). All of the applicant's arguments are based on this assertion, which has now been overcome.

Applicant's arguments with respect to claims 7-8, 21-22, and 29 have been considered but are moot in view of the new ground(s) of rejection.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S. Liang whose telephone number is (571) 272-2148. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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**MANISH S. SHAH**  
**PRIMARY EXAMINER**